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THE INDICATIONS FOR SOME OF THE APPLICATIONS COMMONLY USED IN THE TREATMENT OF CHRONIC GRANULAR LIDS.[1]

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THE success of the medical treatment of a case of chronic granular conjunctivitis depends upon the application of some remedial agent to produce absorption of the "granulations" which are the essential characteristic of the disorder; and, moreover, to bring about this absorption without destruction of the mucous membrane and the production of changes more unfortunate than the original disease.

In the sections on the treatment of trachoma in text-books occasionally one meets with a sentence reading, "for routine treatment nothing is so effectual" as such and such a caustic application. Precisely on account of this "routine treatment" many patients wander from clinic to clinic only partially relieved. The extreme slowness with which the granulations absorb, and the tedious nature of

[1] Portion of the paper on the "Medical and Surgical Treatment of the Granular Lids," read to the D. Hayes Agnew Surgical Society of the undergraduates of the Medical Department of the University of Pennsylvania, December 19, 1890.

well-established granular disease of the conjunctiva are the reasons why ophthalmologists have sought to relegate the treatment of this affection to surgical procedures, and there is no doubt that numbers of cases are managed more successfully by methods distinctly surgical than by astringent and caustic applications. However this cannot always be accomplished, nor is it always wise, and the best method of using the so-called ordinary remedies must be learned.

For the present we will omit reference to operative interference and to the treatment of acute granulations, chronic blennorrhœa (sometimes, but improperly, classed with granular disease), and that form of granulations found in the conjunctiva which by some authors has been called *follicular conjunctivitis*, and classified as a disease separate from true trachoma, and by others looked upon as a mild form of trachoma from which the most severe types may develop. As is well known, the nature of the granulations found in this disease has not been definitely settled, and great difference of opinion as to their origin exist, although the latest researches seem to show that they arise from the natural lymphatic follicles of the part, and that it is the follicles through their changes which originate all the anatomical and clinical qualities of trachoma.

Professor Riehlmann, of Dorpat, who holds views in regard to the origin and nature of trachoma somewhat at variance with those of many other authors, has recently given a description of the life-history of the "granulations" which furnishes a convenient basis for my remarks on their treatment. Ac-

cording to this author, the severe forms of trachoma may arise from the mild varieties which have just been referred to as follicular conjunctivitis, or may develop independently, and are characterized by a follicular eruption, in masses, situated not alone on the surface of the conjunctiva, but also in the depth of the tissue which is infiltrated, and whose circulation is checked, causing partial or extensive disturbance of its surroundings. At first the mucous membrane, of a pale-red or yellowish-gray color, is unevenly rough, slightly or not at all folded, and contains the follicles. These increasing form closely-packed masses side by side and above one another, in such a manner as to compress the true conjunctival tissue and choke its circulation. The mucosa becomes greater and greater in volume, the contents of the follicles soften and ulcers are formed. The infiltration of the neighboring tissue assists in the egress of the contents of the follicles, and brings about a prolapse of the bottom of the ulcer and the formation of warty protuberances. During this ulcerative stage there may be photophobia, lachrymation, and profuse secretion, together with fresh pannus or exacerbations of previously-existing pannus. This pannus consists in the development of closely-packed vessels in the superficial layers of the cornea, sometimes attended by the development of ulcers and formerly believed to be dependent upon a mechanical process; that is, upon the scraping of the roughened lids across the cornea, but described by the author we are now quoting not as a traumatic irritation, but as an independent corneal complication, or follicular formation with lymphoid infiltra-

tion, analogous to the conjunctival disease. As the process continues while the surface of the conjunctiva remains rough, distinct prominences are wanting, and the final stage begins to appear, namely, cicatrization. The cicatricial tissue forms from the old follicles, new ones in the meantime arising, act upon the tarsus previously softened by a lymphoid infiltration, and produce the common deformities of the lid and its margin, namely, entropion, distichiasis, and trichiasis.

In addition to the facts thus quoted in regard to the pathological anatomy of this disease it is important to remember that it is directly contagious, especially during the stage of ulceration and free secretion; that it increases the susceptibility of the conjunctiva to take on acute inflammatory reaction; that it may become an endemic disease in crowded institutions; that certain races, especially the Irish, Jews, and Eastern races, are peculiarly liable, while the negro is almost exempt; that it is more common in low-lying regions, and it is said not to occur at an altitude above 1000 feet; and, finally, that there is much evidence to show its dependence upon a specific microörganism, which, however, has not been positively isolated.[1]

Of the numerous applications used in the treatment of this disease the following have met with deserved favor: Strong solutions of bichloride of mercury, sulphate of copper, either in the form of

[1] Burnett (THE MEDICAL NEWS, November 22, 1890), quoting Prof. G. C. Kober, states that trachoma has been seen at an altitude of 4700 feet, particularly among Indians.

a crystal, or as *lapis divinus*, which consists of alum, nitrate of potassium, and sulphate of copper fused together, and camphor equal to one-fiftieth of the whole added, and the preparation run into a mould to form a stick; nitrate of silver in solutions of varying strength according to the exigencies of each case, or as the mitigated stick, and boroglyceride.

Taking a case in which there is conspicuous lymphoid infiltration of the conjunctiva, but without mucopurulent discharge, and unassociated with much hypertrophy of the papillary layer of the conjunctiva, the lid should be everted, and all portions of the mucous membrane upon which the follicular eruption can be detected carefully touched with a small mop of absorbent cotton previously dipped in a solution of bichloride of mercury, 1 to 500. The conjunctiva lining the lids passes to the ball through a somewhat loose reflection of the membrane forming in the upper and lower lids the fornix, or retrotarsal fold. Now sometimes, when the upper lids are everted, this will come into view, but sometimes it will not, and many mistakes are made simply by turning the lids without an endeavor to bring this fold, which is particularly liable to infiltration with the granulations, into prominence. This usually can be accomplished by making the patient roll the eye strongly downward. If this is not sufficient it is better to evert the lid over a spatula and push the fold into view. This little detail deserves attention, as failure to accomplish it successfully means failure to apply the local remedy on the spot where it is most needed. I have many

times watched attendants in hospitals making applications which never reached more than the anterior portion of the everted lids, totally failing to come into contact with the transmission fold tucked back and under the crease of the turned lid. If instead of the conspicuous lymphoid infiltration just stated the granulations are more dense, more elevated, and rougher, the strength of the bichloride solution may be increased 1 to 300. At first every other day, and afterward three times a week, is sufficient for this application, and at the same time the eyes should be thoroughly irrigated four times a day or oftener with a tepid solution of the same drug of a strength of 1 to 7000. It requires some judgment to know how often to repeat the stronger application, a safe rule for this and for all instances being the amount of reaction produced, and it is wise never to repeat a severe topical medication while the irritation of a previous application is still pronounced. This treatment, which a few years ago was especially advocated by Staderini, Arnauts, and others, in a great many instances is the most satisfactory of the local applications. It may be used whether pannus is present or not, and I do not believe it is contra-indicated even when ulceration of the cornea complicates the pannus. It is easily seen that the physiological action of the application is twofold. First a powerful germicide is employed in a disease that is believed by many to be of bacterial origin; in the second place a caustic is used, but not of such a character that it destroys tissue to the detriment of the surroundings.

If, during the course of the treatment on in-

spection of the lids with a *loup*, a precaution it would be wise to exercise before each application, the condition which I described before, quoting from Professor Raehlmann, of ulceration of the softened follicles with extrusion of their contents is observed; or, if the case is in the stage of softening, with swelling of the papillary layer, increased pannus and mucopurulent or purulent discharge, nitrate of silver becomes the more suitable remedy. In most instances a sufficient strength is 10 grains to the ounce of water, applied with an absorbent-cotton mop. Occasionally, the strength may be increased to 15 grains, and under certain circumstances the mitigated stick may be employed. In all cases where strong solutions are used these must be neutralized with common salt, or the excess washed away with plain water. In making the application a distinct white film should form over all portions touched, and the treatment should never be repeated until the tissue thus destroyed and represented by the white film has been shed with the formation of new epithelium. Nitrate of silver, in the first place, is a powerful germicide, and, in the second place, is superficially strong but does not penetrate deeply, because the film of coagulation which it forms prevents its entrance into the subjacent tissues. When the stage of ulceration has been checked by this means, as may be found by ocular inspection and judged by the disappearance of the discharge, the bichloride of mercury treatment or one of the other caustics may be resumed. During the treatment by the application of the silver, made at such intervals as the amount of reaction teaches is

wise, scrupulous cleanliness with antiseptic lotions, preferably, I think, bichloride of mercury, but, in the belief of some, saturated solutions of boric acid, should be continued. A remedy with which I have had some success, and which I do not see mentioned in the text-books, namely, hyposulphite of sodium put up with glycerin and water may be tried. At one time I used it quite extensively in the Philadelphia Hospital, and while I could not see any effect in the absorption of the granulations, it seemed to relieve the patients of the intolerable irritation of which they so constantly complained.

When by treatment a case has reached that condition in which the surface of the conjunctiva remains rough, but distinct prominences are wanting, and yellowish and white lines begin to intersect each other between the granular surface; or, in other words, when the early evidences of cicatrization are beginning, sulphate of copper or *lapis divinus* is the best application. It is rather painful but must be faithfully applied exactly in the same manner described with the other remedies, always douching the lids with cold water after its use. In the presence of discharge it does not appear to act as efficaciously as at other times, but in all other stages it is useful, in the belief of many, the most useful local medication. It should be remembered now that we have to deal with a caustic not severe enough to destroy healthy structures, but efficient against granular tissue, whether we believe this to be analogous to the granulation of wounds or not. It is, moreover, a stimulant and an alterant to

the mucous membrane at a time when such actions are most necessary.

During the final stage, as the granulations are gradually disappearing, and the cicatrization becoming more complete with a tendency to dryness, it seems to me that boroglyceride has a twofold action, namely, the absorption of those granulations which still remain and lessening the tendency to the production of a xerotic condition. It may be used in a strength as great as fifty per cent., but twenty per cent. usually will suffice. Many authors look with great favor upon this drug in phases of granular disease other than the one I have just described. During all of these stages of the malady, and no matter what astringent or caustic is employed, scrupulous cleanliness should be maintained by the frequent use of one of the "eye-washes" to which attention has been directed.

Much of the preservation of useful vision depends upon the successful treatment of pannus. If this is mild in character, consisting only of a few vessels in the cornea and slight roughening of the epithelium, it will disappear with the subsidence of the granulations. If it is severe in type and associated with corneal ulceration, treatment specially directed to its cure is required. The question, how much violent pannus contra-indicates the local astringent or caustic which is being applied to the granulations must be decided by observing whether the pannus is aggravated or not by the topical medication. As before stated, it has not seemed to me that bichloride of mercury acts unfavorably, but nitrate of

silver and sulphate of copper require watching. During active pannus it is well to reduce the strength of the bichloride of mercury collyrium to 1 to 10,000, or substitute for it boric acid solution. Ulceration of the cornea in the presence of any change in the color of the iris, or of actual iritis, calls for atropine drops, and much relief will be afforded by hot stupes. In the absence of iritic complications eserine is the better drug, and exercises its curative action upon the solution in the continuity of the corneal tissue, and at the same time helps in dissipating the new-formed vascular structure. If the eserine, in a strength of $\frac{1}{6}$ to $\frac{1}{12}$ of a grain to the ounce, causes headache or local irritation, this may be modified by using at night a drop of atropine solution.[1] In other words, the rules for the use of eserine in this complication do not differ from those applicable to corneal ulceration uncomplicated by the presence of granular lids.

I have described old methods and commonly-used drugs, with the exception, perhaps, of the hyposulphite of sodium, the value of which is doubtful, and firmly believe that better results can be obtained with them, medically speaking, than with a host of new remedies that have not stood the test of long experience, provided the three points upon which success depends are observed, namely, complete exposure of the affected area and thorough application of the remedy; selection of the topical medi-

[1] Excellent advice in regard to the use of eserine in this connection will be found in Dr. W. F. Mittendorf's brochure on "Granular Lids and Contagious Diseases of the Eye."

cation according to the stage of the disease which is present, and avoidance of unintelligent "routine treatment"; and scrupulous cleanliness by the aid of antiseptic solutions in the intervals between the use of the local caustic and astringent measures.